Cost and Management

VOLUME XXVII MARCH No. 3

A STUDY OF MANAGEMENT PROBLEMS
By Bruce Heron 98

One of the Industrial Development Bank's nine engineers, Mr. Heron was associated with the Aluminum Company of Canada for a number of years and later spent seven years in a technical management capacity in Canada's defence programme. For the last six years, he has served as Senior Industrial Engineer in I.D.B.'s Montreal office where he investigates, and advises on the economics, the plants and operations of all types of medium and small industrial enterprises in Eastern Canada.

THE ACCOUNTANT'S INFLUENCE ON PRICE DETERMINATION
By George Moller 107

Treasurer and Comptroller of Robertson-Irwin Limited in Hamilton, Ontario, Dr. Moller came to Canada in 1936 and joined Geo. A. Touche & Co. In Europe he studied Law and Political Science at the University of Prague and upon graduation received the degree of Doctor Juris. For some time he was Secretary to the Management of the Bohemian Union Bank. Dr. Moller was admitted to membership in the Institute of Chartered Accountants in 1945 and is a Registered Member of The Society of Industrial and Cost Accountants of Ontario.

INDUSTRIAL PENSION PLANS, PART II
By T. E. Robertson 119

Mr. Robertson is Treasurer of Canadian Westinghouse Co. Ltd. After matriculation, he joined the Bank of Montreal, and later transferred to the Treasury Department of the T. Eaton Co. Ltd., in Hamilton. In 1936 he joined the G. W. Robinson Company and was appointed Secretary and Store Manager. He served in this capacity until 1950, when he went with Westinghouse and was appointed to his present position in May 1952. Mr. Robertson is intensely interested in welfare work and was recently Treasurer of the Senior Chamber of Commerce.

REGULAR DEPARTMENTS

EDITORIAL COMMENT 86
C. & M. ROUND-UP 90
CURRENT ARTICLES OF INTEREST 94
STUDENT SECTION 125

Published Monthly by the
SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS OF CANADA
Incorporated 1920
Editorial and Business Offices: 66 King St. E., Hamilton, Ontario.
J. N. Allan, R.I.A., Secretary-Manager and Editor.

Subscription price to non-members, $5.00 per year. Single copies, 50 cents. Members desiring five copies or more of a single issue, may obtain them at 25 cents. Opinions expressed by articles and comment are not necessarily endorsed by the Society of Industrial and Cost Accountants.

Authorized as second class mail, Post Office Department, Ottawa.

Editorial Comment . . .

Accounting Terminology

Bulletin No. 9 on accounting and auditing practices issued by the Committee on Accounting and Auditing Research of the Canadian Institute of Chartered Accountants in January 1953, deals with the use of the term "reserve" and the accounting for reserves. It is regrettable that the accounting profession seems to have to be pushed into a clarification of the use of basic terms by outside forces. In this case, apparently the strict interpretation of section 12 (e) of the Income Tax Act by the Income Tax Appeal Board and the higher courts, induced the profession to take a firm stand on the use of this heretofore ambiguous and, very often, mis-applied term. The positive recommendation recorded in the Bulletin is that the term "reserve" be used only to designate amounts which have been appropriated — though not required to meet a liability or contingency known or admitted, or a decline in value which has already occurred as at the stated date — either at the discretion of management or pursuant to the requirements of a statute, the instrument of incorporation or by-laws of a company or a trust indenture or other agreement. In future, the term "reserve" will, therefore, be used only in describing items as general reserve, a general contingency reserve, a reserve for possible future decline in inventory values, a reserve for future plant extension, or a sinking fund or redemption reserves in connection with bond and stock issues.

The quoted Bulletin makes suggestions for terms replacing the present inappropriate use of the word "reserve" by recommending the terminology "allowance for doubtful accounts", "accumulated depreciation" or "accumulated allowance for depreciation", "estimated damages payable", "income taxes payable (estimated)", "taxes assessed but disputed", "tickets outstanding", "services paid for in advance", "container deposits refundable".

The Bulletin also recommends that reserves should be created or increased only by appropriation of net profits or surplus and that all reductions in reserves should be returned to surplus. Reserves of this kind should be shown on financial statements as constituting part of the shareholders' equity.

This clarification of the stand of the profession on a very practical term, almost daily in use, is highly desirable and the hope should be expressed that all conscientious accountants will follow the recommendations set forth in the Bulletin, strictly. It is only too bad that

we close the stable door after the horse has been stolen, i.e. after the Income Tax Act and its interpretations have taken advantage of the ambiguous terminology of the past.

In the United States the term "earned surplus" has become a matter of vivid discussion. In the February 1953 issue of "The Journal of Accountancy", A. P. Wendt, C.P.A., a professional accountant in Sault Ste. Marie, Michigan, pleads for a clear, unambiguous, unequivocal replacement for the term "earned surplus". The Accounting Research Bulletin No. 39, published by the American Institute suggested the discontinuance of the use of the term 'earned surplus'. In spite of this recommendation, the term is still used in the United States and is certainly quite common in Canada. According to the quoted article, we are in danger of creating greater confusion to the reader of corporate reports by using an unsuitable replacement to the condemned term. Judging from the 1951 edition of "Accounting Trends and Techniques in Published Corporate Annual Reports" two terms replacing "earned surplus" enjoy the widest acceptance, i.e. "earnings retained for use in business" and "earnings retained in the business". These two terms are varied into "retained earnings" and "earnings retained and used in business". Mr. Wendt concludes that no satisfactory answer to the challenge set forth in Bulletin No. 39 has been found. We cannot agree with him and wish that Canadian accountants would, in larger numbers, change from "earned surplus" to "earnings retained in the business".

In any event, we wholeheartedly concur with Mr. Wendt that the accounting profession which includes the Industrial Accountant, should become more aware of its responsibility in the matter of accounting terminology and make a determined effort to clarify contentious terms, settling on unequivocal, informative terms which would be generally accepted.

1953 Budget

When this issue reaches our readers the first excitement about the 1953 Budget, jokingly called the "dividend budget", will have quietened down. It is, therefore, perhaps in order to take a rather unusual approach to the Budget proposals which by that time have probably become law.

If a business organization budgets for its next fiscal period and is faced with higher costs in the form of either material or wages, or both, the comptroller or budget director will likely try to obtain some support for the assumption of an increased volume of production or sales because only from such increase can he hope to maintain the profit picture in the face of the increased costs.

It seems that the Federal Minister of Finance has been faced with a similar situation as the expenditure of $4,540,000,000.00 is the highest one envisaged so far in the history of this country. Only the expectance of very substantially increased revenues coming from the increase in the Gross National Production made it possible to grant the substantial relief in the tax rates and other provisions of the revenue raising law which this Budget contains.

Although this is probably the election year and the political opposition certainly did not lose any time in emphasizing the relief granted as an election measure, it should be noted with satisfaction that some of the features in the Budget proposals certainly are not appealing to the broad electorate. These are the reduction in the corporation income tax rate of 3% and the increase in the dividend tax allowance from 10 to 20% as well as the retroactive regulations concerning the redemption of shares at premium against payment of a special 20% tax on the premium paid.

Some attempt has now apparently been made also to breach the gap between the accounting and tax concepts of business income confined so far to the so called "reserves" against goods or services to be delivered or performed in the future for payments received in the taxation year. It is to be hoped that this is only the first step in the right direction.

Apart from these improvements which affect only a small sector of the electorate, the big plums which the Honourable D. Abbott has shaken from the revenue tree were all suitable to make very palatable food for the taxpayer-elector. No one will frown on the reduction of individual income tax rates to practically the pre-Korean level.

A review of the budget measures would not be complete without mentioning the feature of doubling the net profit before taxes for corporations to which the reduced rate of now 18 plus 2%, i.e. 20%, will apply for 1953 and future years. This measure supposedly will affect 70% of all corporate taxpayers which shows the very large number of small companies in Canada which now will benefit from this measure. Coupling this measure with the 20% tax allowance on dividends, one may expect that many more smaller corporations than heretofore will consider distributing part of their profits in the form of dividends instead of the present almost persistent habit of using a form of earned income (salary) for this purpose.

Everywhere,

DITTO HELPS "DELIVER THE GOODS" *on time!*

MANUFACTURING
Order and Billing Systems
Production Order Systems
Purchase Order Systems
Payroll Systems, Accounting Reports
Salesmen's Bulletins, Price Book Sheets, Quotas, etc.
Charts, Maps, Graphs, Drawings, etc.

WHOLESALERS
Order and Billing Systems
Salesman's Bulletins, Price Book Pages
Price Book Changes

FINANCIAL INSTITUTIONS
Daily, Weekly and Monthly Statements
Trust Reports, Stock Transfers
Installment Loan Systems

INSURANCE COMPANIES
Policy Card Records, Bulletins to Agents
Reports, Statements & Abstracts

PUBLIC SERVICE
Merchandise Orders, Service Orders
Requisition and Purchase Order Systems, Bid Requests

RAILROADS
Passing Car Reports, Operating Reports
Car Interchange & Interline Exchange
Accounting and Financial Statements

MEAT PACKERS
Order and Billing Systems
Sales Bulletins and Price Lists
Accounting and Financial Statements

DEPARTMENT STORES
Accounting and Financial Reports
Sales and Stock Reports
Ruled Forms, Bulletins, etc.

CHAIN STORES
Warehouse Order and Billing
Price Lists and Changes
Advertising Layouts

CONSTRUCTION & BUILDING
Specifications, Bid Requests
Drawings and Sketches

PRINTING & PUBLISHING
Printing Orders
Advertising and Circulation Statistics
Advertising Presentations
Payroll Systems
Reports and Statements

ASSOCIATIONS
Bulletins to Members, Credit Inquiries
Statements and Reports

ACCOUNTANTS
Profit and Loss Statements
Balance Sheets, Audit Reports
Ruled Forms, Working Papers

GOVERNMENTS
Accounting Reports, Bid Requests
Purchase Orders
Engineering Drawings
Charts and Graphs
Specifications
Material Lists

Profitable peacetime operations stem from prompt delivery of goods—things accomplished—costs curtailed! Supreme in the field of business systems, Ditto's One-Writing Method has proved itself the easier—quicker—more economical way to get things done in *every* line of business.

Without mats—without stencils—Ditto streamlines procedures of the most complex nature—takes routine office copying in stride—provides copies of anything written, typed or drawn in 1 to 8 colors—assures photographic accuracy. Master sheets—on paper stock—are so *inherently* flexible that all, or any part, of data may be used (or added to) whenever, wherever needed.

Call or write today for more facts about Ditto.

DITTO
One Writing Business Systems

MAIL COUPON TODAY
DITTO OF CANADA, LTD.
310 Spadina Ave., Toronto, Canada
Please send us free, without obligation, actual forms and literature showing how Ditto can be used in your business.

Company Name.....
My Name.....*Title*.....
Address.....

C & M Round-Up . . .

By N. R. Barfoot, R.I.A.

War and Defense Spending

A short summary of war and defense spending in Canada from 1926-1951 is a rather interesting commentary on the shift in economics in this country over a quarter of a century.

Dollar figures are expressed in terms of millions.

Defense (Pre War)		*War*		*Defense (Post War)*	
1926	$15.	1939	$ 70.	1947	$ 227.
1931	18.	1940	543.	1948	236.
1936	25.	1941	1,046.	1949	361.
1938	36.	1942	3,100.	1950	493.
		1943	3,565.	1951	1,160.
		1944	4,299.		
		1945	2,891.		
		1946	847.		

25 Years of Taxation

Direct personal taxes consist of taxes levied directly on the net income of individuals plus the various licences and penalties paid out of net income.

They provide the government with current revenue and tend to put a brake on consumption of consumer goods. This makes available a larger share of the gross national production for governmental use. This is a particularly important shift of goods during war periods.

The following table shows total direct personal taxes in 4 periods from 1926 to 1951 and the % of same to personal income.

Year	*Millions*	*% of National Revenue*
1926	$ 53	1.3
1939	112	2.6
1944	838	9.3
1951	1,016	6.4

Direct corporation taxes unlike personal taxes show a continuous rise throughout the quarter century.

Year	*Millions*	*% of Corporation Profits*
1926	$ 34	8.4
1939	115	16.7
1944	598	49.0
1951	1,444	50.7

Indirect taxation is an important source of revenue to the Federal and Provincial governments. There are customs import duties, excise taxes, sales and amusement taxes. Since they are a part of cost of goods produced they have been compared as a % to the gross national product.

Year	*Millions*	*% of G.N.P.*
1926	$ 614	11.6
1939	716	12.5
1944	1,378	11.5
1951	2,519	11.9

A summary of all taxes compared to the total national income provides interesting reading.

Year	*Millions*	*% of Nat. Income*
1926	$ 701	16.8
1939	943	21.6
1944	2,814	28.6
1951	4,979	28.9

Old Age Pensions

At the end of the first nine months of operation 81,016 persons between the ages of 65-69 were receiving government aid. This programme was begun in June of '52.

This represents 16% of the number of people in this age group in Canada. Up to $40.00 per month is available to persons with a limited income.

Cost is shared equally between Federal and Provincial governments. Total cost to end of last Sept. was 23.4 million. This is well below the estimated number of 140,000 people and 64 million cost.

Money Paying Jobs

An analysis of job salaries shows that the managerial types head the list with 38.6% of those listed paying over $4,000. per annum.

The following list of professional occupations show the percentage of those earning over $4,000.00 per year. It may be a guide for you.

Judges, Magistrates	74%
Actuaries	58.6
Dentists	56
Engineers, Mining	49
Lawyers	48
Physicians	47
Engineers, Chemical	46
Professors	31
Accountants, Auditors	22

The Auto Fund

The unsatisfied judgment fund is defined as a fund out of which is paid judgments awarded for damages arising out of motor vehicle accidents plus taxed costs which cannot be collected in the ordinary process of law.

This fund protects the insured person against those without insurance or financial resources to the extent of $5 - $10,000. P.I. and $1,000. P.D.

The uninsured if unable to pay the amount of the judgment resulting from an accident is barred from the road until the judgment is satisfied.

It also gives protection against hit and run drivers. The procedure is to sue the Registrar of Motor Vehicles and when judgment is received apply to the fund in the usual way.

The following statistics are of note after 4½ years of operation.

Payments against known parties	$176,300.00
Payments against unknown parties	338,694.00
Judgments against known parties averaged	2,098.00
Judgments against unknown parties averaged	3,157.00
Total Judgments	925
Suspensions in effect at close of 1951	50,000

New Canadian Records

Canada leads the world in the ratio of life insurance to national income. The Canadian ratio is 110%.

Total life insurance in force in Canada rose 77% between 1946 and 1952. In the U.S. the increase was 67% and in Britain 53%.

The 1952 wheat crop is estimated at 688 million bushels, exceeding the previous record by 121 million set in 1928.

Labour income in 1952 reached an all time high of $7,912 million. New, private and public investment reached a total of $5,181 million.

Building

1953 looks like a much better year in the building and construction field.

Some of the reasons are:

Building inspectors report permits up 112% in January and up 14% for a year back.

House building is estimated at 80,000 starts for this year.

Freer steel and depreciation will obviously assist industrial construction.

Here's new high-speed performance and operating ease to reduce your accounting costs—

Burroughs Sensimatic
ACCOUNTING MACHINES

Here at last is an accounting machine so swift, so efficient, so simple to operate, that it brings bigger savings to every job—does *all* jobs with unerring accuracy!

The Sensimatic's amazing effort-free speed comes from its exclusive sensing panel or "mechanical brain" that automatically directs it through every accounting operation. Its superior design makes the operator's work easy. There is less to do—less to learn. Automatic controls, continuous visibility of work in progress, and complete keyboard control, reduce operations and chance of error—provide peak production on *every* accounting job.

Get the facts today about Sensimatic's astonishing record of low-cost, high-speed operation! Call the Burroughs office nearest you. It's listed in the yellow pages of your telephone book. Burroughs Adding Machine of Canada, Limited, Windsor, Ontario.

CHANGE JOBS INSTANTLY . . . at a turn of the job selector knob. Any four different accounting operations controlled by one sensing panel. Any number of panels can be used, so there's no limit to the jobs a Sensimatic will do.

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

Current Articles of Interest . . .

A compilation of current articles available to members, on loan from the library of the Society.

ACCOUNTING

ACCOUNTING AND LOGIC, by S. R. Brown, The Australian Accountant — Dec. '52.

BUDGETS AND BUDGETING

THE ADMINISTRATION OF THE BUDGET, by H. W. Martin, The Australasian Institute of Cost Accountants — Jan. '53.

CONSOLIDATIONS

PRESENTATION OF CONSOLIDATED EARNINGS, by Howard I. Ross, The Canadian Chartered Accountant — Feb. '53.

COST CONTROL

COST CONTROL AS APPLIED TO MANUFACTURING, by W. E. Standish, The Australasian Institute of Cost Accountants — Jan. '53.

COST DATA

THE EVERYDAY INVISIBLE COSTS, by V. L. Gole, The Australian Accountant — Dec. '52.

DECENTRALIZATION

CONTROL OF DECENTRALIZED ACCOUNTING IN A MULTI-PLANT ORGANIZATIOIN, by Carl M. Blumenschein, The Controller — Feb. '53.

DECENTRALIZATION: ONE CURE FOR PRODUCTION HEADACHES, by Scott Rogers, Factory Management and Maintenance — Feb. '53.

EMBEZZLEMENT

METHODS OF EMBEZZLEMENT — AND PROTECTIVE MEASURES, by R. C. Taylor, N.A.C.A. Bulletin — Feb. '53.

FINANCIAL MANAGEMENT

RECENT TRENDS IN CORPORATE FINANCE, by Stanley R. Miller, American Management Association, Financial Management, Series No. 101.

FINANCIAL STATEMENTS

PRESENTATION OF CONSOLIDATED EARNINGS, by Howard I. Ross, The Canadian Chartered Accountant — Feb. '53.

GOODWILL

PURCHASED GOODWILL SHOULD BE AMORTIZED ON SYSTEMATIIC BASIS, by George Walker, The Journal of Accountancy — Feb. '53.

GOVERNMENT CONTRACTS

DEFENCE AMORTIZATION, by A. Wilton Moore, Canadian Tax Journal — Jan.-Feb. '53.

INCOME TAX

INCOME TAX RATES, by J. Harvey Perry, The Canadian Tax Journal — Jan.-Feb. '53.

THE OLD ORDER CHANGES, by Gwyneth McGregor, The Canadian Tax Journal — Jan.-Feb. '53.

INVENTORIES

CONTROL OF INVENTORY THROUGH QUANTITY STANDARDS, by J. Hildreth, N.A.C.A. Bulletin — Feb. '53.

AN OPERATING VIEWPOINT ON INVENTORY CONTROL, by J. L. Wilson, N.A.C.A. Bulletin — Feb. '53.

ECONOMIC LOT-SIZE AND INVENTORY CONTROL, by Clark & Ritchie, N.A.C.A. Bulletin — Feb. '53.

CURRENT ARTICLES OF INTEREST

ORGANIZATION

METHODS OF IMPROVING ADMINISTRATION, by J. J. Macdonell, The Canadian Chartered Accountant — Feb. '53.

PROFIT ANALYSIS

PRODUCT GROUP PROFIT REPORTING FOR MATERIALS WHOLESALERS, by W. Lewis, N.A.C.A. Bulletin — Feb. '53.

QUALITY CONTROL

MAKE STATISTICAL METHODS EASIER TO UNDERSTAND, Factory Management and Maintenance — Feb. '53.

SCRAP

A FRONTAL ATTACK ON THE SCRAP ACCOUNTING PROBLEM, by J. G. Barrett, N.A.C.A. Bulletin — Feb. '53.

CONTROL OF PROPERTY LEAVING A MANUFACTURING PLANT, by W. E. Cuyler, N.A.C.A. Bulletin — Feb. '53.

TIME AND MOTION STUDIES

IMPORTANT FACTS ABOUT TIME STUDY MEN, Factory Management and Maintenance—Feb. '53.

WHOLESALING

PRODUCT GROUP PROFIT REPORTING FOR MATERIALS WHOLESALERS, by W. Lewis, N.A.C.A. Bulletin — Feb. '53.

ADDRESS OF PUBLICATIONS

N.A.C.A. Bulletin, 505 Park Ave. (Fourth Floor), New York 22, N.Y.

The Canadian Chartered Accountant, 10 Adelaide St. E., Toronto, Ontario.

The Journal of Accountancy, 270 Madison Ave., New York 16, N.Y.

The Australian Accountant, Butterworth & Co. (Australia) Ltd., 430 Bourke St., Melbourne, Australia.

Factory Management and Maintenance, 330 W. 42nd St., New York 36, N.Y.

The Australasian Institute of Cost Accountants, Bank House, Bank Place, Melbourne C-1.

The Controller, 1 East 42nd Street, New York 17, N.Y.

American Management Association, 330 West 42nd Street, New York 36, N.Y.

Canadian Tax Journal, 191 College St., Toronto 2B, Ontario.

THESES ADDED TO MEMBERS' LIBRARY

AUTOMOBILES

AUTOMOTIVE INDUSTRY, MANUFACTURING OVERHEAD IN THE, by G. Hobbs, R.I.A. ..... No. 85

BREWERIES

BREWERY, COST ACCOUNTING FOR A, by J. R. Griner, R.I.A. ..... No. 137

DEPARTMENT STORES

DEPARTMENT STORE, UNIT STOCK CONTROL SYSTEM OF A LARGE, by R. V. Anderson, R.I.A. ..... No. 132

ELECTRO-PLATING

ELECTRO-GALVANIZING DEPARTMENT, COST ACCOUNTING FOR THE, by J. W. Winn, R.I.A. ..... No. 138

FOUNDRIES

GREY IRON FOUNDRY, COST ACCOUNTING SYSTEM FOR USE IN A, by V. D. Kyle, R.I.A. ..... No. 153

GLASS

SAFETY GLASS MANUFACTURING PLANT, COST ACCOUNTING IN AN, by G. L. Innes, R.I.A. ..... No. 155

PAYNE, PATTON & PUGSLEY
CHARTERED ACCOUNTANTS
Gordon S. J. Payne, C.A. Donald R. Patton, C.A.
Philip T. R. Pugsley, C.A.
507 University Tower, Montreal 2, UNiversity 6-6961

Save Time With
Multigraph
SIMPLIFIED BUSINESS SYSTEMS

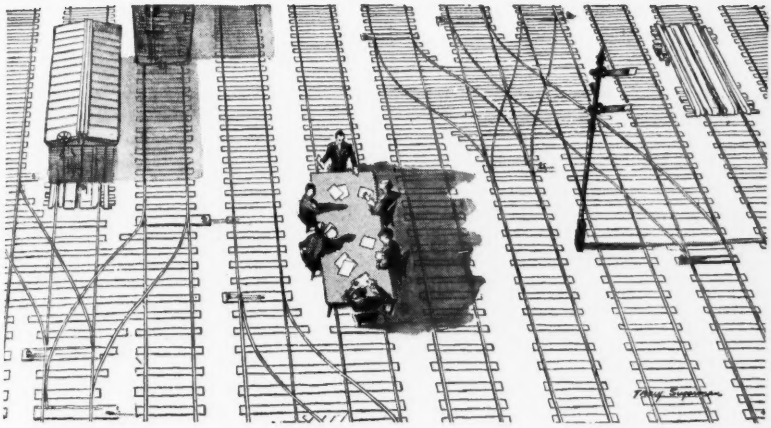
Office tasks that used to mean delays — assembling, inter-leaving and correcting carbon copies, needless typing and retyping — are eliminated by Multigraph's exclusive Multilith process and new reproducing masters. Multigraph saves time — saves money.

ADDRESSOGRAPH - MULTIGRAPH
of Canada Limited
TORONTO ONTARIO
Sales and Service Branches Across Canada

CURRENT ARTICLES (Continued)

HOSPITALS
GENERAL HOSPITALS, A COST SYSTEM FOR, by J. Stewart, R.I.A. ..... No. 140

MACHINE TOOLS
HEAVY MACHINE TOOL MANUFACTURING JOB COST SYSTEM, ACCOUNTING FOR A, by W. E. Williams, R.I.A. ..... No. 147



How to keep production on the right track

Weekly production conferences move full steam ahead when every man present has all the facts before him.

You can have the facts—exact figures to replace guesses and hunches – if you put Keysort production control to work.

Compiled in a weekly Work Load Summary, the notations on Keysort cards tell you at a glance *what* machine centers are falling behind, *how* much work is already scheduled for each machine, *which* centers are delivering up to schedule, *where* production is overloaded or undersold, and other pertinent data.

With a McBee Work Load Summary, derived from Keysort cards, you get concise facts like these every week:

A There are 9.6 weeks' production ahead of the plant. In general, things look good.

B But here's a bottleneck – Work Center 290 has 15.2 weeks of work ahead. Investigate sub-contracting or possibility of a third shift.

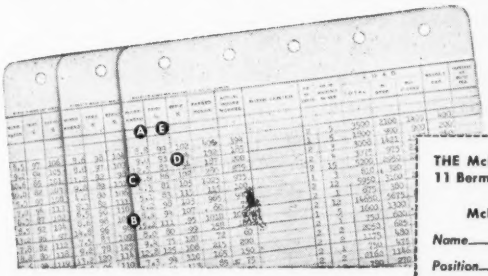
C Work Center 250 has only 4.3 weeks of work ahead. Better have Personnel transfer some of the skilled men to overloaded departments.

D Overall efficiency is low. Be sure to check Work Center 230 on next week's report.

E Performance is improving, though. Jackson rates a compliment.

With facts like those, you know where you stand. You're never caught unawares. You can schedule production with informed decision.

The McBee representative near you can quickly explain the Keysort method and the Work Load Summary. Ask him to drop in. Or mail the coupon below.



THE McBEE COMPANY, LTD.

Sole Manufacturer of Keysort—The Marginally Punched Card
The McBee Company, Ltd., 11 Bermondsey Road, Toronto 13, Ont.

MAIL THIS COUPON TODAY

THE McBEE COMPANY, LTD.
11 Bermondsey Road, Toronto 13, Ont.
Please send me details on McBee's production control methods.

Name_____
Position_____
Firm_____
Address_____
City_____ Prov._____

538

A Study of Management Problems . . .

By Bruce Heron, P.Eng., M.E.I.C.,
Senior Industrial Engineer,
Industrial Development Bank.

On the basis of his observations in dealing with operations in every type of industry, the author points up some of the problems in the organization of functional management and offers concrete suggestions for maintaining a well balanced organization.

WITH Canadian industry, employment and income at peak levels it is a good time to take stock of management and some of its many problems, especially when consumer and capital expenditures are some 10% above the level of last year and our gross national product is running in excess of $23 billion, the highest annual rate in our country's history.

The pattern of economic conditions under which Canadian industry operates continues to change and is fraught with unexpected incidents and emphasis is thus placed on the need for management to be constantly on the alert and to repeatedly examine the enterprise of which it has charge in true perspective in relation to its real market position. Dun & Bradstreet's periodic statistics continue to tell us that 90% of business failures both in Canada and the U.S. have their underlying cause in the inexperience of management, resulting particularly in insufficient sales, undue operating expense, receivable difficulties and competitive weakness.

Basic Principles of Effective Organization

The function of organization begins with the objective of the enterprise; this requires a leader, sufficient skilled personnel and the necessary equipment. Breadth of vision and understanding of humans as such are important requisites in the establishment of a sound organization. The primary function of managers in formal authority is to organize, plan, direct and control responsible subordinates in order to coordinate all their efforts in the interest of the enterprise.

It is the quality of the company relationships and the quality of the chief executive's decisions that determine his success as an officer. His basic responsibility is to create an atmosphere in which his organization will work harmoniously, intelligently, imaginatively and happily. He must create a spirit in the organization. His subordinates want to be proud of their boss's decisions, they want to believe that his decisions are based on high purpose and integrity. Their evaluation of what the chief executive stands for creates what we call morale which is the

capacity of a group to work together with maximum effectiveness. Thus, whatever the boss is will be reflected throughout the entire organization, and it will go a long way toward molding the business character of every man in it. A corporation itself then, develops a character just as does an individual and we are aware that potentially good executives are attracted to some companies because of that very character.

The directorate or management set-up should at no time be considered fully satisfactory. It is desirable periodically to assess the situation to assure that direction and management is not going backward, not standing still, but going forward with the objective of assuring that the enterprise is advancing its position relative to competition and the country's economy — that is the essence of good management.

The principles expounded here may seem to be somewhat academic but it is their omission or the laxity in their fulfillment which causes a business enterprise to lose its character and its drive and finally its competitive stature.

We in the Industrial Development Bank have the unique opportunity of examining many operations in every conceivable type of industry and I must say that the experience is a stimulating one inasmuch as we are often able to advise on certain problems some of which, of course, have to do with the organization of the functional management itself. Indeed, in respect to certain small operations we have sometimes found that the proprietor is competent on the production side of the business but woefully incapable in respect to sales promotion. You gentlemen are aware of the need for what is now commonly called functional totality, meaning the ability to effectively deal with all aspects of the enterprise. In one case when one of our customer's sales were lagging badly we induced the owners to employ professional general management of proven capability, both in production and sales, and the result has been astonishingly favourable.

Financing Management

A corporation provides the means whereby the money savings of hundreds of individuals are accumulated into an aggregation for the purpose of making and distributing products in volume and as it serves this function effectively it survives. It is now an established fact that the corporation has performed this function better than any previously known economic organization.

Sound financial planning anticipates unforeseen and, possibly, drastic changes and business reverses caused by inflationary spirals and depressions and it does not only provide for contingencies but prepares

to benefit from the distress of competitors who have failed to properly manage their operations. It is sometimes wise to provide an obsolescence reserve when business rivals are developing new plant or machinery whose impact is yet unknown or when the technological developments in the particular industry are so accelerated that the outlook is obscure.

It is desirable to undertake a routine of periodic short-term operation and cash budget projections. These assist in the arrangements for operations' financing, particularly if new equipment is being purchased. Some pretty solid thinking goes into these projections before they are put into written form as they embrace the marketing plan, receivables' collections, production targets, inventory control, payroll and overhead budgeting, and they can be used to set objectives for subordinate officers in each of the operating divisions of the company organization.

Most of you are aware of the heavy inventory losses absorbed in the wool textile and the appliance industries in particular last year in Canada. A post-mortem examination giving proper weight to the obviously inflationary influences affecting these markets at that time would likely indicate that those inventories were bought at exorbitant levels and business prudence would have pointed to greater caution at the expense of sacrificing some business to competitors.

Plant Management

Now I will turn to plant, overhead and production efficiency. I assure you gentlemen these three are each broad subjects and with which the Industrial Engineer generally finds himself much at home.

After the passing of anti-trust laws toward the end of the 19th century, free competition became the key-note in American industry with increased production, cost reduction, the continual lowering of prices to the consumer and constant improvements in the design of products. Where living standards, and thus labour costs in Europe remained fairly low relative to machine costs, there was little cause to become cost conscious, but in American industry, rising standards of living and labour costs induced cost consciousness to the extent that machines have become relatively cheap, especially in the last ten years when industry has faced a unit labour cost rise of over 70%: the situation is pretty much the same in Canada.

Within any one industry, because of the trade union movement in particular, wage rates have tended toward equality, the performance characteristics of the average machine are known precisely and, finally,

through competition, there has been a general levelling of product selling prices; all these features have put emphasis on the one important remaining element of margin and that is the effective handling of labour to obtain high productive efficiency.

Analysis of 1949 statistics of Canadian manufacturing establishments shows that 10% of our factories in that year were turning out 83% of our total productive capacity which demonstrates the high degree of mass producing facilities; the 90% group of firms producing but 17% of the output potential were obviously the marginal factory units which generally do not lend themselves to a high degree of technology. All along there is the tendency for smaller companies, in order to hold their competitive position, to expand or merge, or alternatively to specialize or be eliminated.

The decision to expand production through new plant or by merger is generally taken after a careful survey of the present and future position in the market, the financial resources available to effect the expansion and to support the increased operations. The most important feature here is the assurance that the expansion will provide substantial economies in costs which, in turn, can reduce selling prices so that increased market demand will result; factual data are essential in such surveys and execution of the expansion or merger should be rigidly controlled to assure achievement of the objectives as, unless a better product is sold to the public for the same price or the same product at a substantially lower price, the economic advantage of the expanded operation has not materialized.

Relative to each unit of labour and production, working capital required for mass production is reduced but fixed capital requirement is increased; from a production pattern wherein individual skills have found expression, transformation to a mass production operating plan involves a basic change in the character of the fixed assets together with complete integration of the production elements in the overall plant set-up. Mass production is generally effected by the development of mechanization of the process and it is now recognized that the main labour effort expended in industry is in the handling and cross-hauling of goods in process. Mass production techniques involve ownership of highly expensive plant and this means that we associate efficiency with financial considerations or, in other words, we think of mass production in terms of the efficient use of both labour and capital, and we are aware that under mass production planning the key is the fastest turnover of minimum inventory.

Mechanized materials handling equipments, such as fork-lift trucks, are now often considered to provide more economical movement of

goods in process. In some cases the existing plant building embraces crowded column spacing which severely restricts mechanized movement. Most new plants have single storey and remote column spacing layouts and thus provide greater versatility and freedom of movement to allow for mechanization which greatly improves productive efficiency, to say nothing of greater capital liquidity.

It is considered desirable to test the projected cost schedules for the expanded operation against present figures, embracing all administrative charges, to assure the economy of the investment. At the same time the relationship of fixed costs must be watched due to their effect on the break-even level.

Production management is constantly faced these days with demands from the labour force for higher wages, shorter hours, easier tasks, paid vacations and holidays and free insurance and health funds. At the same time material and equipment prices have been rising, investors have been expecting higher dividends on their risk capital and, finally, the consumer has wanted no increase in prices. In these circumstances, we find production managers concentrating on increasing productivity while reducing costs.

You will see that the production manager's position has been an unenviable one, however there is a solution to his problem in that modern industry is continually studying and improving its products with a strong emphasis on the engineering of simplicity into the product itself, and the standardization of materials and interchangeability of parts and sub-assemblies reduce not only the tool room and stock room effort but also that of the purchasing department, the planning department and, finally, the overall financing because of the better control and quicker turnover of inventory.

Also aiding in the solution to this problem have been the great advances in automatic machinery which have had the effect of reducing direct labour costs. Indeed, some of the larger engineering and consulting firms will now contract for the design and construction of complete modern factories which incorporate the last word in layout and production equipment, these are called "package" plants and are set up and handed over to the owners after being run in and proven. Naturally, such plants are expensive but often they are well warranted by the reduced cost of finished products. Such plants eliminate the wasted effort of multiple handling of material in process and the integration of the sequence in the production scheme is carried out to the ultimate.

It must be kept in mind, however, that it is not the lowest unit cost under full-rate production which measures the efficiency of an

operation; it is the overall unit production and amortized capital cost taken over the whole trade cycle and considered relative to the cost schedule of competitors.

Referring again to our own experiences, if a customer is having difficulty with his cost finding system or is planning a new product we often advise on simple but effective costing routine. The important point we find here is simplicity consistent with reliability so as not to overload the administrative expense. Costing, of course, begins and ends with the Profit and Loss Statement and if a costing system is not practical for a small operator we induce him to use a simplified periodic Profit and Loss Statement. Another means of assistance has been the examination, targeting and controlling of production throughout and in a recent case a much increased volume was established and continues, and with a significant cost reduction.

Personnel Management

Personnel management is now considered one of the important fields in the overall management function.

Labour on the one hand can be purchased like any commodity; it is merely an indispensable ingredient in the product. On the other hand, it is human and its effectiveness and economic value relates closely to the skill with which it is directed. Scientific methods of raising output will not succeed if it is not considered that production is a human process; there must be some incentive, some tangible reward, not only of remuneration but of pride in achievement.

Senior management has tended to overlook the importance of the non-financial rewards which include protection from insecurity, a chance to learn, the opportunity to advance to the limit of one's ability, the privilege of using one's own ideas, knowledge of one's progress, recognition of accomplishments and contributions, social satisfaction from one's associations, fair treatment, information about the company's activities and, finally, the progress and contribution to society in which the worker feels he has shared. Cost reduction is essential through increased production despite increased wages and we thus need increased efficiency and a minimum of absenteeism and personnel turnover.

Unionism is the natural result of the isolationism of management to the problems of the worker and we now spend precious time and money in labour relations. Work stoppages from labour disputes have been sufficiently embarrassing that many a large purchaser is now as much concerned with a firm's ability to deliver on schedule as the price and quality of its merchandise.

Research is now being undertaken by many corporations to study better means of selection of employees, training and supervision and a knowledge of why people re-act as they do, and it has already been learned that financial incentives are not too effective when the working force morale is low. Means are being studied to make supervisory personnel a better partner to management and to re-establish those motives which prompt pride in the quality of workmanship; the worker's morale is important to achieve this. Finally, it has been found advantageous to develop a continuing training programme for all sub-management, particularly at the foreman level, as this consolidates the important link of communication between the management and the workers.

Sales Management

Top management should repeatedly examine its overall sales promotion methods. Sometimes it may be advantageous to decentralize the effort into regions; in any event, factual data are necessary on the markets to be covered and some firms now carry out intensive studies right in the market areas, have representatives get acquainted with, join and participate in trade organizations and get right down to earth on the buying habits of the consumers. By this means, sound sales quotas are established all down the line even to the last salesman and market outlet. The result is a reliable market figure and the most effective advertising and selling methods can be put into execution according to available finances while at the same time production planning at the factory can be better organized. The key to success here is to achieve sales right up to the quota limits.

Emphasis is now being given to the placing of advertising in strategically important publications in order to derive the highest degree of advertising pull right in the planned market areas.

There is a strong trend toward factory pre-packaging of consumable articles. This is brought about particularly by the increase of urban population, our higher standards of living, the smaller families, smaller dwellings and the demand for goods in smaller economic units. The cost of retailing merchandise has tended downwards in the last twenty-five years despite higher rents, labour costs and taxes and is due in good measure to pre-packaging economies which include — brand identification, assurance of measure, convenience, prevention of substitution, waste and spoilage reduction, reduction of store labour and increased volume per unit of store area.

A comparatively new but fast developing function of management has to do with product and market research.

It is all very well for industrial management to let the other fellow undertake product and market research but in so doing it condemns its own enterprise to a second place in the long-term market picture. Statistics relating to research activities in the United States show that in 1920 the annual expenditure by industry amounted to $28 million; by 1930 it was $115 million, by 1940 it was $225 million, in 1947 it was $500 million and it has now reached a $1 billion annual investment by private industry in that country. The pre-war relationships of research to the trade cycle will not necessarily hold true in future years because of the magnitude of these expenditures. Instead of research being a passive element in the business cycle, the cycle itself will undoubtedly be affected in no small measure by the research to which industry has committed itself.

One important consideration in respect to research is that it should be completely dissociated from daily routine production and business problems and must be free to reach far afield. Another consideration is that the amount of money spent on research should bear no relation to the volume of sales as in that case, in a falling market, research would be reduced when exactly the opposite is indicated as needed; therefore the research programme should be divorced from the fluctuations of business conditions.

Many nationally advertised products which have been on the market for perhaps twenty years are now completely changed through continuous improvement resulting from research and a good example is the lubricating oils used in automobiles wherein additives including saponifiers, inhibitors, wetting agents, film stabilizers and lead compounds are now incorporated to accommodate the more exacting requirements relating to the technological advances of the internal combustion engine. Had these brand-name products not been progressively improved, they would have been eliminated.

The deliberate search for product improvement is the only means whereby a business can maintain its market position in the long term. A management lacking in initiative can readily consider itself protected by the apparent strength of its established trade position, particularly in respect to its main items, and thus might fail sufficiently to improve its major products and leave itself easy prey to a more research-minded competitor.

Finally, studies of manufacturing and selling practices, particularly competitive practices, are valuable. One need not copy his competitor, but it is well to know how a business rival carries on his operations if only to assure oneself that the competitor's methods are inferior.

YOU CAN CUT ACCOUNTING COSTS with NATIONAL AUTOMATIC ACCOUNTING

Get the FREE 20-page booklet "How To Save Money On Your Accounting", from your local National representative, or write to the Company at 222 Lansdowne Ave., Toronto, Ontario.

Hundreds of firms report that National Mechanized Accounting has saved them from 20% to 40% over old-fashioned accounting methods. And the National Class 31 Accounting Machine in particular combines more time-and-money-saving features than have ever before been found in one machine. It makes possible many profit-making by-products of posting.

Amazingly accurate, fast and neat, the Class 31 Accounting Machine has a certified automatic method of proof which maintains accounts in balance at all times and saves countless hours of checking and rechecking.

HERE ARE A FEW OF ITS MANY OUTSTANDING ADVANTAGES

1. **Automatic selection and control** of more than 70 functions by arrangement of the posting control bars.
2. **Simultaneously adds and subtracts** — or **transfers balances** — into **any** combination of totals.
3. **Instant, positive correction** — in a **single** operation — of amounts entered in error in **any** combination of totals.
4. **Electrified typewriter keyboard** — faster, smoother, easier operation . . . uniform impressions on multiple copies . . . permits description whenever desired.
5. **Fluid-drive carriage** — travels in either direction, smoothly, at uniform speed.

Yes, with these and many other time-and-money-saving features, the National Class 31 Accounting Machine will prove an amazing help to you in cutting costs and building profits.

•

Phone or write your nearest National office today, about this National Class 31 Accounting Machine.

National

CASH REGISTERS - ADDING MACHINES
ACCOUNTING MACHINES

THE NATIONAL CASH REGISTER COMPANY OF CANADA LIMITED

Head Office: Toronto ***Sales Offices in Principal Cities***

The Accountant's Influence on Price Determination . . .

By GEORGE MOLLER, D.Jur., C.A., R.I.A.,
Treasurer and Comptroller, Robertson-Irwin Limited.

How far is the accountant able to participate in the function of price determination? To answer this question, the author discusses the various factors which govern pricing policy and then shows, by illustrations, the influence of the accountant in dealing with each.

IN CHOOSING this title, the expression "price fixing" had to be avoided because it reminds one too much of the Anti-Combines Act and it is preferable not to get enmeshed in the rather dangerous field of "price fixing" by combine or government interference. Trying to define price determination could be described for our purpose as "the activity which aims at setting the sales price most profitable for the manufacturer, trader or service provider". Webster's New American Dictionary defines "price" as "value, amount of *money* asked for something to be sold". "Pricing" is characteristically termed "to set or fix the value of; to enquire as to the cost of". "Determine" means "resolve, decide" but also "give reason or impetus to, as circumstances determine the course of events".

The question which we want to look into is the influence and the role the accountant has in helping management and sometimes even guiding management, in setting the right price. This is one of the most vital functions of management because a wrong price can easily lead to the ruin of any enterprise and once a price has been wrongly set, it is quite difficult to correct the mistake.

The accountant, playing his rightful part in price determination, must possess methodical experience and knowledge, tempered by an estimate of the forseeable changes in the structure of costs and the resulting price measures which will occur either right now or in the future period for which he makes his forecast. To this end, budgeting and budgetary control become, more and more, a universal tool of the accountant. Let's not forget our main theme — price determination. What is the aim of the economic system under which we live? It has been called various names. It has been called the Free Enterprise System; it has been called the Capitalistic System. Regardless of the name for which we have some particular liking, it can be stated with some degree of truth that our enterprise, regardless of what it is, is motivated by the effort of gaining a profit. "Profit" Webster says, is "a

Note: An address delivered to the Peterborough Chapter.

pecuniary gain' benefit from a business transacted or investment made". Every one of us, I would dare say, is not working just because of his love for his work. This applies in equal force to the countries behind the iron curtain. Naturally, if one is lucky enough to have a profession or occupation which he finds interesting and if he has ambition enough to propel himself into a higher effort, he will be more successful and more satisfied. But, every one of us wants some measurable result of his effort and our means of measuring results in this country, is the Canadian dollar as other currencies are in other countries. We measure our success personally and as an enterprise in dollars and, therefore, prices have to be set in a way that they result in the highest obtainable profit for the enterprise.

Factors In Price Determination

Some people with a less economic background than accountants are presumed to have, could say, "Why don't we, for instance, ask $600.00 for a refrigerator instead of $350.00? Would we not get $250.00 more profit by manufacturing and selling a refrigerator than we get to-day, and, therefore, be so much better off at the end of the year?" This statement, representing profit as a *direct* and single function of the difference between cost and sales price, is a fallacy of the first order, although often encountered. An entrepeneur pricing his refrigerator at $600.00 would probably end up in bankruptcy, even if he were the only enterprise making refrigerators at first. Naturally, no one would be willing to pay $600.00 for a refrigerator which he could get from any other source for $350.00. Therefore, the highest price would not be the price returning the largest profit to the enterprise. This, I would say, primitive fact has been recognized pretty soon but not before some enterprises have paid for their lack of foresight and knowledge in this respect, by failure. Again and again we find enterprises which, in a futile attempt to make too large a profit, end up with a loss. It could, perhaps, be claimed that to determine which should be the largest profit obtainable from a certain set of prices, is the object and duty of the economist. We very often make the mistake of thinking too much in the terms of giant enterprises as they exist in considerable numbers in the United States, but of which only a few operate in Canada.

Recently, Howard C. Greer showed clearly that costs and prices influence each other but that neither cost determines prices, nor prices determine cost.[1] Other factors, like desire, often stimulated by advertising, consumers' resistance at certain price levels, general economic

1 Howard C. Greer, 1952 Dickinson Lectures, Harvard Business Review, July-August 1952 and September-October 1952.

trends, and many other factors combine in influencing price determination.

The experienced cost accountant knows that once he leaves the field of prime costs, much will depend on his judgment in the allocation of manufacturing, selling and administrative overhead. There is no hard and fast rule by which fixed semi-variable and variable costs can be distinguished in varying circumstances. The question alone whether to use historic costs or replacement costs in determining depreciation to be recaptured in the sales price may have a very decisive influence on what the accountant will present as the true cost of the product. Greer's approach of looking at cost factors as "building blocks" which, once they are nicely isolated, can be arranged in alternative combinations, seems very illuminating. Every child knows that building blocks can be arranged in many ways and fashions, although only a few ways will produce a useful building and the accountant should realize soon "what he will consider costs to be for the particular purposes of the moment".

We know already that the highest price is not always the best one to be chosen in any one particular operation. What price, then, is the best price? The answer to this question is by no means an easy one. In their most recent textbook on Cost Accounting,[2] Matz, Curry and Frank say, "Even though the price-setting procedure is considered difficult, methods have been suggested that will assist in and will permit the computation and the determination of a sales price", i.e. a sales price which is supposed to render the highest obtainable total return for the enterprise. The methods to which I will refer are quoted from this book.

Equating Marginal Costs with Marginal Revenue

This means ascertaining the sales price, which, taking the percentage of variable costs and the amount of fixed costs into consideration, will produce the largest absolute net profit. As the determination can only be made at any one particular time and economic conditions are not static, the conclusions drawn may prove unreliable or misleading.

Conversion Cost Pricing

This consists of an examination which among two different, or three or five different products a manufacturing concern can produce with its productive capacity and facilities, should return the highest profit for the enterprise. Very often the answer which seems obvious will prove

[2] Matz, Curry, Frank, Cost Accounting; (South Western Publishing Company, Cincinnati 2, Ohio, 1952).

to be the wrong one. If, for instance, to use an example picked up in one of the recent textbooks, a manufacturing plant can produce locomotives and mousetraps, it seems obvious that it should be more lucrative for the manufacturing plant to produce its locomotives where they can, perhaps, make a gross profit before taxes of 25 or 30%, whereas the tight market in mousetraps may yield only 2, 3, 4% — a very limited profit. Therefore, one could conclude that they should only produce locomotives, and — leaving out the question of demand and supply which we don't know the answer to (maybe there is a greater demand for locomotives than for mousetraps these days) — we have to take into account how much material goes into a locomotive and how much is the labour or conversion cost, to make out of this material the locomotive, against how much labour or conversion cost is going into the mousetrap compared to the material cost in the mousetrap. You will find that the conversion cost going into a mousetrap may be percentagewise or relatively higher than those going into a locomotive. You know, perhaps, from your knowledge of manufacturing that it takes a year sometimes to produce a locomotive or a ship and that the productive facilities of the plant will be tied up with this one unit for the whole year whereas it will certainly take slightly less than a year to produce a mousetrap. Therefore, the facilities will be used much more often, the unit volume will be much higher in mousetraps than in locomotives. This very exaggerated example has been chosen in order to make the point clear beyond doubt.

Investment Pricing

Every enterprise requires a certain investment which consists of the funds which the entrepreneurs, be it a single owner or the shareholders of a big corporation, have put or invested into the enterprise to make it go. This investment is supposed and expected to earn a return and sometimes management have set themselves a certain goal in this respect. If a company, for instance, has a capital of let's say $1,000,000.00 the management will be confronted by the question, "What returns will be satisfactory to our shareholders so that when the next election of a Board of Directors and appointment of officers rolls along, these shareholders will not object to our management and throw us out and replace us with people promising better returns, but will be *satisfied* with the returns we have produced and partly distributed to them, partly retained for the further development of the enterprise?" To do that they have to ask themselves, "How much can a shareholder reasonably expect to get for his money?" or if we again revert for a moment to the single entrepreneur or the family enterprise, "How much is the family or the

single owner expecting to get out of their capital investment in the enterprise — apart from being paid for their work if they themselves work in the enterprise?" That, naturally, is again an economic deliberation but it isn't a very difficult one. You all know that if you invest in Dominion Bonds which the most of the people seem to consider the securest investment, you get a return of, let's say 3%. (They may get, in fact, only 2⅞% or they may get even 3½%.) Therefore, if you cannot offer more than 3% to your shareholder or your owner, he will very quickly get sick and tired of having his money tied up in an, after all, risky enterprise and will try to shift his investment from his shares or his business into Dominion Bonds. 3% will, therefore, be the limit on the low side. Again, if a risky enterprise of a gold mine (a gold mine is, perhaps, not a very good example under present conditions) an oil producing or developing company promises an opportunity of returning 100% (perhaps a bit exaggerated) you have the wide range between 3 and 100. Naturally, security of investment will also play a quite substantial role in any decision. Nevertheless, we have to assume that you have to give the shareholder-entrepreneur considerably more than 3% to hold him interested in your manufacturing enterprise. We can, therefore, arrive at what we could call a normal or normally expected return under certain conditions from a manufacturing enterprise and we could, for argument's sake, set this return at 6% of the invested capital. There may be people, economists or otherwise, who will set it at 8, and there may be others who say 5 is enough, but market reports show an average for Canada to-day of about 6%. In order to return 6% to the shareholder, the company has, under present circumstances (because the 6% net actually only represents 48% of the profit before taxes), to earn 12.5% before taxes. For simplicity's sake, let us assume that our taxation level has been reduced to 50% which we all fervently hope will happen in the next budget. A company with an invested capital of $1,000,000.00 which makes more than $10,000.00 a year and, therefore, is subject, with its profits over $10,000.00, to the high corporation income tax rate, would have to make about $120,000.00 before taxes in order to return to the shareholders $60,000.00 or 6%. Management has to aim at the $120,000.00 profit before taxes in setting prices. This figure again would not be enough because we would be very unwise managers if we were to distribute all our profits to our shareholders. We want to keep some of the profits in the company for development and for a rainy day. How much again, is a matter of judgment and economic planning? Which one is the stronger, is hard to decide. If you, therefore, assume that you want to keep about $40,000.00 out of each $100,000.00 earned for development,

you have to make a profit of $200,000.00 a year to give the shareholder 6%, retain 4% and hand over to the Government 10%. Thus, we have already arrived at some figure to aim at; our aim is certainly subject to change with changing conditions but a profit of $200,000.00 seems a reasonable goal for an investment of $1,000,000.00. Turning back in our minds to the locomotive factory, if the invested capital can be turned over only once a year, we are forced to make a profit of 20% before taxes on the one series of locomotives produced during the year in order to return to our shareholders $60,000.00. If, on the other hand, our plant is making a mousetrap and can, perhaps, turn over the invested capital 24 times a year, then naturally, we can divide $200,000.00 by 24 and can be satisfied with 1% profit on sales instead of 20% profit on the locomotives and still produce the same profit result for the owners. Investment pricing is nothing else but one consideration leading to the determination of prices. This is, perhaps, the place to mention that the accountant has to know something about corporation finance in order to properly advise management on a profit goal. He has to gauge from an analysis of the stock market and other sources, how much a satisfactory return to the shareholder should be. Otherwise he wouldn't be able to start his determination attempt properly.

Differential Cost Pricing

This is a well known cost accounting term, explained in every textbook.[3] This approach uses the theory of marginal or differential costs. Once you have attained your capacity of say 80% which you may call, in your own mind, normal, any additional sales which can be made returning more than the differential costs will produce additional profit. The return has to be in excess of the costs required to produce this particular additional volume.

The last quoted method is the use of:

Standard Costs for Pricing

This method is well defined in Cost Accounting textbooks and theory. Pricing under this method is based on standard costs, which are

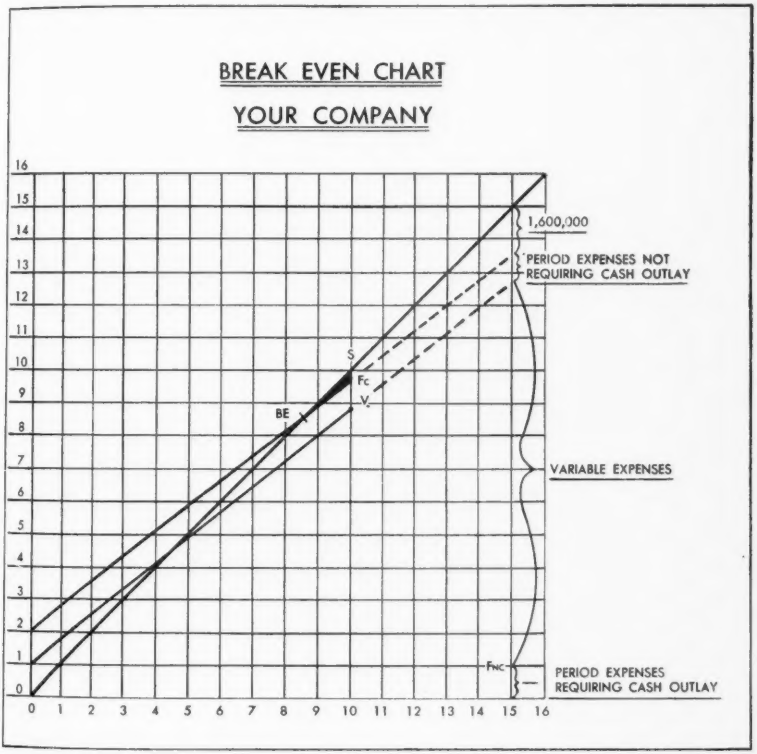
---

3 F. C. Lawrence and E. N. Humphreys, Marginal Costing, (MacDonald & Evans, London, 1947).
Matz, Curry, Frank, Cost Accounting (South-Western Publishing Company, Cincinnati, 1952) Chapter 28 — Differential Cost Analysis. (See also books and articles quoted there).
John J. W. Neuner, Cost Accounting Principles and Practice, (Richard D. Irwin, Inc., Chicago, 1950) Chapter XXVI — Re-examination of Cost Accounting from the Managerial Viewpoint.
Clarence L. VanSickle, Cost Accounting Fundamentals and Procedures (Harper & Brothers, New York, 1938) Chapter XXIII — Differential Cost Analysis.
Cost Studies published by the S.I.C.A. Differential Cost Accounting, April 1944, Differential Costs, May 1949.
Carl Thomas Devine, Cost Accounting and Analysis (The Macmillan Company, New York, 1950) p. 564 and Chapter XXXIV.
William L. Campfield, Accounting Adaptation of Marginal Cost Theory as an Aid to Management in Price Policies (The Controller, November 1952).

the costs entering into or caused by any one product, predetermined on a scientific basis.

Volume-Cost-Price Relationship

Coming back to Differential Cost Pricing, the following discussion could be developed: If a company or enterprise, having adopted the theory of differential cost pricing, permits itself to acquire additional volume at lower prices, certain facts should be cleared before the accountant advises the general sales manager or the person or body in the company who is responsible for price setting and for producing a profit margin, how far they should or could go in this direction. A primitive break-even chart can serve to illustrate this statement. Those familiar with the break-even chart, of course, may skip the following paragraphs or consider them revisiting a familiar landscape.



Invested capital $2,000,000.00
Sales $10,000,000.00 Capacity $15,000,000.00
Profit before Taxes $400,000.00, Variable Expenses 76% of Sales
Period Expenses $2,000,000.00 ($1,000,000.00 depreciation)
Break-Even point

P	=	S	—	FE	—	VE
$400,000.00	=	10,000,000.00	—	2,000,000.00	—	7,600,000.00
						76%

$S = F + .76S$ BE = 8,333,333.00
Proof: 8,333,334 × .76 +2,000,000.00 = 8,333,334.00
At capacity $15,000,000.00 — 11,400,000.00 — 2,000,000.00 = $1,600,000.00 Profit.

Volume Cost Relationship

In explanation to the foregoing break-even chart, it should be mentioned that the term "period expenses" has been used in preference to the conventional term "fixed costs". The term "fixed costs" appears sometimes misleading because the dollar value of these costs is by no means "fixed" but there are better characteristics as occurring during any given period without relation to the volume of business.

In our chart we have split the period expenses into those requiring a cash outlay and those not requiring a cash outlay. The latter, if not recovered in the sales proceeds, will not immediately lead to the financial embarrassment of the enterprise. The normal recapture out of sales proceeds strengthens the cash position of the enterprise.

It would have been tempting to show on the chart the results of a reduction in the sales price for either the whole quantity or the quantity in excess of the break-even point sales. Giving in to this temptation would have led to a confusing presentation because a break-even period is always built on the assumption of a definite sales price per unit. Any change in the sales price actually requires the construction of a new chart. It is, therefore, undesirable to superimpose the graphic presentation of conditions resulting from for instance, the reduced sales price over the presentation on the original chart.

Coming back to our illustration of a company which wants to make use of the differential cost pricing approach, we proceed as follows:

If an enterprise, on past experience, breaks even at a certain point it means that at a certain volume it has neither a profit nor a loss. At this point the enterprise's revenue equals its expenditures for the period. We had assumed that we have an enterprise which has its break-even point at $8,333,334.00 sales value of production (these

figures are only of relative importance) and $2,000,000.00 period expenses which are here right from the start; if we (theoretically) do not produce one unit, we still have to expend $2,000,000.00 for items enumerated before. We, furthermore, assume that out of the volume of $10,000,000.00 which is indicated on the sales line, $7,600,000.00 are variable expenses, $1,000,000.00 period expenses requiring a cash outlay (administration and sales) and $1,000,000.00 requiring no cash outlay (e.g. depreciation). $10,000,000.00 sales produces a profit of $400,000.00. The break-even point lies at $8,333,334.00 sales. From there on we start to make a profit. The profit increases with increasing volume up to the full capacity of the enterprise. We cannot produce more than the full capacity permits, therefore, the profit line and sales line ends with full capacity.

Any further increase in volume would require more machinery and the company probably would have to employ an assistant general manager and an assistant comptroller and some junior billing clerks and almost immediately, period expenses would go up a nice big jump like climbing a staircase. If that happens, we face really another enterprise. There isn't any more the enterprise we have been looking at because it has changed its capacity and our chart has become inapplicable.

Within the profit triangle, BE-S-Fc lie the differential costs. Our break-even point is set under a definite price structure. Up to that point, no price reduction will be considered because we have first of all to break even in order to cover all our costs. From there on, your company makes a profit, which is clearly apparent. At the $15,000,000.00 point, i.e. at the top — at 100% capacity — we make a profit of $1,600,000.00. Let's for one moment assume we can reach $12,000,000.00 (80% capacity) at the original price structure. Then the sales manager complains about consumer resistance. He can't sell more at that price. Let's assume all people who can afford (to come back to the refrigerator illustration) to pay $375.00 for a refrigerator, have already bought a refrigerator. There is nobody left, presumably, in the population who would buy a refrigerator for $375.00, but if we could produce a refrigerator for $300.00, we could find some people who couldn't afford $375.00 but will be able to pay $300.00. If we could sell at $300.00 to another 10% of customers, we could sell another 10% of our production or $1,500,000.00 at the original price. But all those to whom we have already sold for $375.00 will cry "murder" because we have, naturally, robbed them, or the dealers to whom we have sold our product for $375.00 will probably throw our salesman out the next time he comes because we have sold some of our products in other places for

$300.00. If we would disturb our market by selling 10% at $300.00, the decision should have to be negative — we couldn't do it. Furthermore, if we could increase our production and instead of producing refrigerators which we couldn't sell at $375.00, produce washing machines with the same equipment, which would not influence the refrigerator market, we would be better off to produce washing machines, or anything else which would not disturb the market of our main products. We very often encountered in Europe marginal or differential costing in the textile printing industry, where a certain pattern was produced with great initial or period expense; the inland market was in one season saturated at the original price which we didn't dare to reduce for the reasons already mentioned. The solution was to export the same pattern at a lower price into territories which could not afford our original price. This enabled us to increase our volume without disturbing the inland market. This is one possibility of using a differential price unless dumping duty considerations enter into the picture. At the point where the inland demand was saturated, we could produce another 4,000 units. How much did these 4,000 units cost us? We do not take into account in this calculation, our period expenses at all, which are carefully recovered at that point. The differential costs will be the difference in total cost producing these 4,000 additional units and the costs in producing the normal quantity. Only the increase in expenses caused entirely by the additional 4,000 units are the differential costs and anything we can get from customers for these 4,000 units in excess of these additional or differential costs, is profit. How do we find these costs? We extend 4,000 units at $375.00 (the original sales price) = $1,500,000.00. 76% of this figure will be our variable cost, i.e. $1,140,000.00. Anything in excess of this figure or $285.00 per unit, will increase your company's profit. This should illustrate the differential costs pricing aspect.

Inflationary Considerations

We have not dealt so far with the undercurrents of inflationary thinking which has to a certain extent permeated our economy since the beginning of the second world war. It has been, perhaps, tempered to the end of the war, and still is tempered in the United States, by price control measures which, as we all know, have not proven fully effective. As an aside, it may be stated that the Canadian postwar way of dealing with inflationary development has been much more effective than that used in the United States. We have, so far at least, avoided in the after-war period, direct price control measures. Inflationary thinking in price determination has a great importance and an in-

creasing amount of literature is being produced recently on this particular subject.[4] We have to face creeping inflation, that is an inflation which isn't doubling prices within one year — we, fortunately, have been spared of that so far — but shows a decrease in the purchasing power of the monetary unit of a few percent only within one year. The main feature is the depreciation provision for plant and equipment. As you know, depreciation means the recovery of your capital expenditures over the useful life of your capital assets. You recover, obviously, dollars which will not buy the same amount of machinery as they bought at the time when this machinery which you are using was bought. This is a serious problem and without making it too difficult, I want to say that this inflationary effect on the depreciation provision, makes it necessary to retain more out of earnings than would otherwise be the case because the money which we recover in the sales price of our product, under the title "depreciation", is in itself not sufficient to really buy new machinery once the old is worn out. We cannot go into more detail but just stress the point that this is one of the reasons why, all other circumstances being equal, companies are unable or unwise to distribute all, or even more than half, of their profits to shareholders or owners.

Having discussed the methods which we have to determine the price for our products, I would like to give one specific example of practical accounting treatment of a price determination problem. We were faced, in the middle of the year, with the fact that our Union demanded and received an increase in wages of 10c per hour. This increase in wages could, naturally, be very simply implemented in our cost calculation as far as direct labour was concerned. Up to the increase, the products for instance required 100 hours at $1.33 which was $133.00 which was increased to $143.00. The direct labour factor was easily determined but a serious difficulty arose in our overhead rates, because these are partly based on direct labour and partly based on material values. In the middle of the year we were suddenly faced with the task of determining what the effect on our costs would be. We should have, by rights, recalculated every overhead rate in the Plant. For a multiple product enterprise with 20 product groups, this task would have been, perhaps, beyond immediate possibility of performance. Our basic overhead study had shown that indirect labour in *all* manufactured products

[4] Accounting for Inflation, a study of techniques under conditions of changing price levels by the Taxation and Research Committee of the Association of Certified and Corporate Accountants (Gee and Company — Publishers — Limited, London, 1952).
George Moller, Historic Costs — The Lesser Evil, The Canadian Chartered Accountant, July 1949.
Ralph Coughenour Jones, Effect of Inflation on Capital and Profits: The Record of Nine Steel Companies (Journal of Accountancy, January 1949).
Depreciation Policy When Price Levels Change, Controllership Foundation Inc. (1948).
Inflation: Challenge to Free Enterprise, Controllers Institute of America (1951).

together amounted to a certain percentage of direct labour. Although we were quite aware that this proportion did not hold good for every product group, it was felt that with only a comparatively small increase in this factor (indirect labour) we were justified in assuming that the proportion could be applied through our product groups. In one word, we had the choice between being accurate and late, or less accurate and prompt in our price determination adjustment. We computed, therefore, the following calculations (the figures used are only for illustrating purposes): Our direct wages were 100 and our indirect labour was 100 totalling $200.00. 7% variable social security charges (vacation pay, paid holidays, workmen's compensation) amounted to $14.00, giving a total of $214.00. The increase of 10c amounted to 8% of the average wage rate of $1.20 per hour. 8% of $214.00 equals $19.12. To this amount, our usual profit margin was added and we arrived at the dollar value which had to be added to every $100.00 of direct labour based on the old wage rate included in any one calculation if we wanted to maintain our prevailing sales price structure. That shows how we overcame the rather complicated task of correcting all our sales prices. For a transitory period we continued using the old wage rate in our calculations and developed the new prices by simply adding the aforementioned amount for every $100.00 direct labour (at the old rates) included in the calculations. It should be understood that this was only a temporary measure but it was used as an illustration to show to what use existing statistical records and overhead studies can be put to in an emergency brought about by an unpremeditated wage increase or similar changes in the condition underlying price calculations. It should be mentioned in this connection that every change in prices has to be carefully examined as to the consequences which the change will have on the volume of the company's sales and general operations. That again comes back to my remark at the beginning that the highest price is by no means always the one producing the greatest profits for the company.

Industrial Pension Plans . . .

By T. E. Robertson, A.C.I.,
Treasurer, Canadian Westinghouse Co. Ltd.

In this article, the many factors which must be considered in setting up an industrial pension plan are reviewed by the author. Particular stress is given to the trends in social and economic conditions and government legislation. Presented in two parts, the first section appeared in the February issue of "Cost and Management". In this section, the author deals with the cost of pension plans and offers an explanation of the various types of plans that are in use.

PART II

IN CALCULATING the cost of a pension, we are trying to determine the amount of money necessary to be set aside each year during an employee's service with a company, so that, on his retirement, these amounts, together with interest accumulation, will be sufficient to pay him a specific sum each year as a pension until his death. If it were known exactly what the rate of interest would be on the funds, both during the period when the employee is working as well as after his retirement, and the exact date when he would die, there would be no problem whatever in calculating the exact cost of a pension. Unhappily, these two factors (1) interest yield and (2) the date of the employee's death, are unknown and extremely vague. Probabilities of what might happen to these two factors is the work of actuaries who, from the study of events in the past, try to foretell the probabilities of the future.

In dealing with interest yields, the average rates paid on Government bonds in 1900 was 3.61%, in 1921 6% and in 1947 an all-time low of 2.5%. Currently, Government bonds are yielding somewhere around 3¾%. The importance of these fluctuations in rates will be realized when it is understood that a *difference of 1% in interest rates over a 30-40 year period will make a difference of approximately 25% in the cost of annuities.* Actuaries, in estimating costs of pension plans, are naturally inclined to be conservative and always base their calculations on a fairly low and conservative interest rate.

In estimating the number of years which an employee might live after retirement, the actuaries base their assumptions on life expectancy tables which have been prepared from the mortality experience of many hundreds of thousands of individuals. There are a number of tables in use to-day and many of them have significant and important differences. The table most commonly in use by Canadian and American insurance companies is the 1937 Standard Annuity mortality table rated down one

year. Independent actuaries as a rule use a table which is equivalent to the British Offices Annuities table also rated down one year. As an illustration of the difference in these tables the life expectancy of a male, according to the Standard Annuity Table, at age 41 is 32.1 years; whereas in the British Offices Table it is 30.7 years. The life expectancy as shown by these tables will not necessarily compare with the actual experience of the employees of a particular company, due to the nature and conditions of work and the personnel policies of the company in the selection of its employees and other similar factors. Also, actuarial tables are based upon past history of the population and no allowance is made in such statistics for the trend which is taking place to-day in longer life expectancy of the population due to improved medical research and discoveries to which I have already referred in discussing retirement age.

When, therefore, a certificate is received from an actuary stating what the probable cost of a pension plan might be, it should be realized that it is at best only an intelligent estimate and cannot be accepted as an absolute statement of fact. If interest rates in the future should rise, the costs of pensions would be significantly reduced. On the other hand, if by a combination of better medical treatment and medical discoveries the life span of individuals is materially increased, it would add very substantially to pension costs.

It is usual for an actuary to estimate the cost of a pension plan on the assumption that all employees will reach retirement age. Two very important things happen which very substantially reduce this cost in group industrial pension plans. *The first is* that a great many employees for one reason or another terminate their services with a company before reaching retirement age, and *the second is* that a number of people die before reaching this age. It has been estimated that not more than one out of five employees of a company actually reaches retirement age and is paid a pension. Actuaries will, if requested, make allowance in their cost calculations for death and termination of services. In the case of death, they can make reasonably careful assumptions but the estimates in regard to termination of services are at best only assumptions since it is absolutely impossible to foretell with any degree of accuracy what might or might not happen to any particular company in its employment pattern over a long period of 30 to 40 years.

When making payments to a pension plan at its initiation, it is usual for the employer to make these payments without allowance for the death or termination of service of the employees. On death or termination of service, all contributions made on their behalf by the employer are used to reduce the cost of current contributions or re-

quirements of the fund, except those which have been vested. These contributions which are returned to the fund in this manner can very significantly reduce the cost of a pension plan to an employer, particularly during a slack period when a large number of the working force may be laid off.

Funding The Pension Plan

When we speak of funding a pension plan, we are referring to the investment of the contributions to the plan of the employer and the employee, as well as the extent to which funds are being made available to meet its liabilities. When the plan is first established, the greatest problem is providing the necessary funds to take care of the past service liability. To give some idea of the magnitude of the amounts involved, it was estimated by the United States Steel in 1949 that to fund the pension plan demanded by the union at that time would ultimately require a sum of money equivalent to the total capital investment of the company itself. It is not uncommon to find that the amounts required to provide for the past service liability of pension plans are more than the accumulated undistributed surpluses of companies. Very few companies have sufficient funds or resources to meet their past service liability on the establishment of a pension plan. It is usual to provide for it on an instalment basis and spread this cost progressively over a 10-20 year period. Special provision is made in the Income Tax regulations under which such payments are allowed as deductions for income tax purposes. Early in 1952 a further innovation was introduced by Income Tax legislation in what is known as "terminal funding", whereby as the name implies, the employer shall pay each year the capital sum required to purchase the pension benefit for each employee who retires during the year and is entitled to pension benefits. You will readily appreciate that the demands of unions for pensions ranging from $100 to $125 a month are utterly impractical and absolutely beyond the financial ability of most companies to meet if they are to be provided for on a sound and properly financed basis. The three methods of funding pension plans are —

1. Purchase of group annuity contracts with insurance companies.
2. Purchase of Dominion Government Annuities.
3. The administration of funds by trustees appointed under the plan.

Group Annuity Contracts with Insurance Companies

Group annuity contracts may be purchased from practically all well-established life insurance companies of Canada. In negotiating the purchase of such contracts, the important considerations are the bases used by the insurance companies in establishing their rates. The three important factors are first, the mortality table used, second, interest yield and, third, the loading charge. The most common mortality table in use by insurance companies is the Standard Annuitants Table which they rate down one year; interest rates are currently quoted at anywhere from 2½% to 3½%, and loading charges which were calculated at around 7½% up until last year, are being revised by many companies and no firm pattern has yet emerged. The loading charge is the amount charged by the insurance companies to meet their costs of operation and conducting business. There is a wide variation in the types of plans which may be selected from those offered by insurance companies and great care should be exercised in the choice of these, since once a contract is underwritten with a specific insurance company, it is extremely difficult and costly to change to another company.

Insurance contracts are possibly the most costly method of funding pension plans. Their chief advantage, of course, is the assurance to employees of the security of the plan and of its proper administration and that if he should terminate his service with a company prior to retirement, he has the option of obtaining the return of his contribution, with or without interest, depending upon the terms of the insurance contract, or he may continue the contract in his own right.

Dominion Government Annuities

Until April of 1948 possibly the most popular method of funding pension plans was to purchase Government Annuities from the Dominion Government. Up to that time, these annuities were calculated on British Offices Annuitants Tables rated down one year with interest at 4% and without a loading charge. As previously mentioned, the British Offices Annuitants Tables are more favourable than those of the Standard Annuitants Tables. Also, a 4% interest rate was a much higher interest yield than allowed by Insurance Company contracts or by investments of self-administered funds.

The greatest objection to Government Annuities and one which has prevented many companies from accepting them has been the Government's refusal to repay contributions to employees if they terminate their services with a company before retirement. Money once paid on Government Annuity contracts can only be returned to em-

ployees in the form of an annuity at retirement age. Contributions are refunded, however, to the beneficiaries of an employee if he should die before retirement. A further disadvantage of Government Annuities is that annuities up to only $100 per month may be purchased. Under such circumstances, it is usually necessary to make other arrangements to underwrite the amount of any pension which may be in excess of $100 per month.

Self-Administered Funds

In a self-administered fund, all contributions are paid to a trust under the administration of trustees appointed under the terms of the plan. These trustees are usually officers of the corporation or a Trust Company. The funds are held and invested by the trustees and pensions paid from them. When a company elects to fund its plan on a self-administered basis, it acts as its own underwriter and assumes all the risks of the underwriter in connection with fluctuations in interest rates and mortality experience. It is not advisable for a company to set up a self-administered trust unless it has a comparatively large group of employees registered under the pension plan, since a small group of employees is not sufficiently broad enough on which to base mortality experience.

The advantage of a self-administered trust is in the flexibility which the trustees have in its administration and the investment of its funds. Experience to date would seem to indicate that it provides pensions at the lowest possible cost and it is estimated that the cost is anywhere from 25% to 30% less than insurance contracts and somewhat cheaper than Government Annuities.

Income Tax regulations require that investments of such trusts must be limited to those authorized under the Canadian and British Insurance Companies Acts. The company is not authorized to make investments in its own notes, stocks, bonds or other securities.

Any discussion on industrial type pension plans, would not be complete unless some reference were made to Government Old Age Pensions. Since January 1952 when Old Age Security payments commenced in Canada, a number of companies have taken another look at their Pension Plans, with the result that in quite a few cases integration formulae have been introduced. This has provided a larger pension benefit up to age 70, when at that age the Government's $40.00 applies. and the Company's pension benefit is proportionately reduced to provide a total "levelled" pension income to the pensioner.

The introduction of Canada's Old Age Security Plan will undoubtedly be helpful to companies who have not yet introduced an em-

ployees' Pension Plan, as they can probably now afford a plan which, integrated with Government Old Age Pensions, will provide satisfactory pensions.

Those companies who already have plans and who have been thinking of integrating Old Age Pensions with their company benefits must recognize the difficulties in effecting this revision, as it would mean an actual reduction in benefits provided under their present plan.

In a recent speech by J. S. Forsyth, Director of Pension Fund Plans for the Income Tax Department, he compared the Social Security Benefits in the United States with Canada's Old Age Security Benefits. Under Social Security, direct contributions are made by employer and employees of a fixed percentage of the employee's salary, not in excess of $3,600.00. The pension benefit is then determined by —

1. Remuneration received.
2. Length of service in covered employment.
3. The attainment of age 65.

He points out that this can be considered a true pension plan in comparison with benefits paid in Canada, which are based only on residence and age requirements. He argues further that the additional taxes imposed to meet the cost of these benefits are not a direct contribution by the employer on behalf of his employees. As an example — an employer having 100 employees makes a profit of $100,000, on which he pays an additional tax of 2%. Another employer having 100 employees makes a profit of $10,000, likewise pays an additional tax of 2%. Thus, one employer pays 10 times the amount of tax as the other, although they both have the same number of employees.

I have quoted Mr. Forsyth's reasoning on this problem, as to me, it appears significant that any plans by industry toward revision of their existing pension plans which may contemplate integration on the basis used in the United States, will bear very careful study.

My final thought on pensions relates to the generally accepted criterion that retirement income should approximate ½ the amount of terminal earnings. Obviously, it is impossible to provide benefits of this extent for the executive and professional worker in the higher income brackets, because of the limitations of our tax regulations. However, as encouragement to those in this class, I quote from the report of the Royal Commission on the Taxation of Annuities and Family Corporations —

"Maxima which are provided in the tax law must, to achieve their purpose and to give equality, be revised periodically in the light of current circumstances, which may represent a complete change from the circumstances which govern the original decision."

Student Section . . .

Comments by A. V. Harris, C.A., R.I.A.

FUNDAMENTALS OF COST ACCOUNTING — 1952 EXAMINATION

QUESTION 5 (18 marks)

(a) From the following figures obtained from the records of the A.B.C. Cotton Mills, at the close of business June 30, arrange an intelligent statement that will show the percentage of waste for the year.

	Quantities (Lb.)	*Values*
Cotton in process at beginning of year	15,500	$ 4,795.00
Finished yarn on hand at end of year	195,875	60,118.12
Cotton purchases	414,402	151,331.83
Cotton in process at end of year	12,700	2,095.50
Cotton fed	618,147	268,800.73
Finished yarn on hand at beginning of year	55,815	36,372.55
Shipments for year	401,186	325,335.71
Cotton on hand at beginning of year	591,250	171,719.60
Cotton on hand at end of year	387,505	54,250.70

(b) Based on the above, prepare a statement of manufacturing and cost of goods sold per pound, arranged in proper order, using such of the following additional figures as are necessary. Unit costs should be calculated to the nearest cent per lb. only.

Manufacturing expense	$81,056.24
General expense	21,226.20
Waste sales	3,475.19
Interest and discount	9,136.91
Other losses	2,509.74
Other income	831.39

(c) State any items which, in your opinion, should be drawn to the attention of the company management, after reviewing the statements prepared.

SOLUTION TO QUESTION 5

(a) *Computation of Waste (Lb.)*

Inventories, July 1:		
Cotton	591,250	
Process stock	15,500	
Finished yarn	55,815	
Total	662,565	
Cotton purchased	414,402	
To be accounted for		1,076,967
Inventories, June 30:		
Cotton	387,505	
Process stock	12,700	
Finished yarn	195,875	
Total inventory	596,080	
Yarn shipped	401,186	

Accounted for		997,266
Wastage		79,701
Lb. Waste	79,701	= 14.7524%
Lb. Manufactured	541,246	

(b)

THE A.B.C. COTTON MILLS
STATEMENT OF YARN MADE AND SHIPPED
YEAR ENDED JUNE 30, 19

	Quantity in Pounds	*Unit Cost*	*Amount*
Cotton, July 1	591,250	$.29	$171,719.60
Cotton purchases	414,402	.36	151,331.83
Total	1,005,652	.32	$323,051.43
Cotton, June 30	387,505	.14	54,250.70
Cotton fed	618,147	.43	$268,800.73
Manufacturing expense			81,056.24
Production cost			$349,856.97
Less Waste sales	79,701	.43	3,475.19
Net production cost	538,446	.64	$346,381.78
Cotton in process, July 1	15,500	.31	4,795.00
Total manufacturing charges	553,946	.63	$351,176.78
Cotton in process, June 30	12,700	.16	2,095.50
Cost of yarn made	541,246	.64	$349,081.28
Yarn on hand, July 1	55,815	.65	36,372.55
Yarn available	597,061	.64	$385,453.83
Yarn on hand, June 30	195,875	.30	60,118.12
Yarn shipped	401,186	.81	$325,335.71

STATEMENT OF COST OF YARN SHIPPED
YEAR ENDED JUNE 30, 19

	Pounds		*Unit Cost*	*Amount*
Yarn on hand, July 1, 19	55,815	@	$.65166	$ 36,372.55
Cost of yarn made as above	541,246	@	.64496	349,081.28
Yarn available	597,061			$385,453.83
Yarn on hand, June 30, 19	195,875	@	.64496	126,331.54
Cost of yarn shipped	401,186		.64589	$259,122.29

The closing yarn inventory has been valued at $60,118.12, and it is necessary, therefore, to reduce the value used in the statement of cost of yarn shipped to this amount. The journal entry is:

Profit and Loss	66,213.42	
Yarn Inventory		66,213.42
To reduce inventory to market value as of June 30, 19		

(c) 1. Manufacturing expense includes direct labour.

2. It must be assumed in the computation of waste that no poundage has been added by the introduction of dyestuffs, bleaches, or other chemicals.

3. There is little merit, probably, in computing "the expense per pound" of "Depreciation on Buildings", "Interest and Discount", "Other Losses", and "Other Incomes". Any depreciation applicable to production costs should have been allocated to "Manufacturing Expense". The other items named have no direct relation to either pounds produced or pounds shipped.

The relationship existing between "General Expense" and pounds shipped is likely to be more significant. This unit cost is $.053 per pound.

4. The unit cost of yarn made has not been used in valuing the closing yarn inventory. This inventory has been valued at less than half the unit cost of production, with a corresponding increase in the unit cost of yarn shipped over the unit cost of yarn made. The conservative valuation placed on the inventory may have been dictated by a seriously weakened yarn market. If such is the case, it would have been preferable to show the cost of yarn shipped at production costs and to have reduced the inventory value to market prices by a special charge to Profit and Loss.

COMMENTS

This examiner was surprised at how few candidates attempted this question. The terminology of the problem was not too specialized for a non-textile accountant to understand. At least 50% of the papers examined did not even show an attempt to answer the question. In view of the number of marks allotted to this question, and to Question 3, also poorly answered, many students had great difficulty in accumulating marks, so that ultimately it was necessary to regrade all papers.

ADVANCED COST ACCOUNTING (Paper I) — 1952 EXAMINATION

QUESTION 3 (6 marks)

The Watson Manufacturing Company has compiled the following data:

	50%	75%	100% *Normal*	150%
Total Costs Variable	$ 45,000.	$ 67,500.	$ 90,000.	$135,000.
Fixed	60,000.	60,000.	60,000.	60,000.
	$105,000.	$127,500.	$150,000.	$195,000.
Sales (at $3. per Unit)	$ 90,000.	$135,000.	$180,000.	$270,000.

Required:

(a) What Dollar Sales are made at the break-even point?

(b) Is there loss because of idle capacity at break-even point? If so, what amount?

(c) How much of the Net Profit at 150% of normal may be said to be due to intensive use?

(d) When operating at 50% of normal should the firm produce an added 5,000 units to sell for a special order at $2.50 each? Explain?

SOLUTION TO QUESTION 3

(a) $BE = V + F$

$BE = .5BE + 60{,}000$

$.5BE = 60{,}000$

$BE = \$120{,}000.$ — Break Even Point

(b) $120,000. = 66⅔% Normal
Idle capacity = ⅓ or 20,000 Units
Loss due to Idle Capacity could be said to be Profit at Normal = $30,000.
At Break Even — Profit = ...
∴ Loss due to Idle Capacity $ 30,000.

OR at Normal Fixed Cost Per Unit $\frac{60{,}000}{60{,}000} = \$1.$

20,000 Units below Capacity means loss of 20,000 × $1. = $20,000. due to Idle Capacity.

(c) Net Profit at 150% = $75,000.
Profit at Normal = $30,000.
Assume Fixed absorbed in full when Normal reached. Therefore Costs above 100% are Variable only = 1.50 Per Unit
Extra Units (150% over Normal) $30,000
30,000 × 1.00 = $30,000. which is the Gain from Intensive Use.

(d) If the special order will not lead to price cutting by competition and does not affect firm's normal market — Yes.

At 50% — Loss			$ 15,000.
if Sales		$ 90,000.	
+ 5,000 × 2.50		12,500.	
Total Sales		$102,500.	
(35,000) Var.	$ 52,500.		
Fixed	60,000.	112,500.	
Loss			$ 10,000.
Loss reduced by			$ 5,000.

COMMENTS — QUESTION 3

The examiner was interested to find out how many students had difficulty in establishing the break-even point for the figures supplied in the above problem. It was the opinion of this examiner that the (a) and (d) part of the problem were quite simple. Most students had a good deal of trouble with the (b) and (c) parts — though as the solution indicates, little calculation was required. Marks allotted for solutions to this problem were indeed altogether too few.